

112 Stat 1854

Authority

Financial Assistance Award

DENALI COMMISSION 510 L Street, Suite 410 Anchorage, Alaska 99501 (907) 271-1414 (phone) (907) 271-1415 (fax) www.denali.gov

Award Number	01162-00	
Award Title	Sustainable Northern Shelters Sewage Treatment Plant	
Performance Period	August 1, 2009 through December 31, 2011	

CFDA Number 90.100

Cold Climate Housing Research Center PO BOX 82489 Fairbanks, AK 99708-2489

Recipient Organization & Address

Denali Commission Finance Officer Certification Jennifer Price 08/18/2009

Phone: (907) 457-3454

Recipient DUNS # 608773003 TIN # 920169929

Cost Share Distribution Table

Accounting Code	New Funding		Prior Perio	Total		
Accounting Code	Denali Commission	Other Contributors	Denali Commission	Other Contributors	Total	
95670000AL	\$119,639.00		\$0.00		\$119,639.00	
	\$0.00		\$0.00		\$0.00	
	\$0.00		\$0.00		\$0.00	
	\$0.00		\$0.00		\$0.00	
	\$0.00		\$0.00		\$0.00	
Various Match		\$72,441.00		\$0.00	\$72,441.00	
		\$0.00		\$0.00	\$0.00	
		\$0.00		\$0.00	\$0.00	
		\$0.00		\$0.00	\$0.00	
		\$0.00		\$0.00	\$0.00	
Total	\$119,639.00	\$72,441.00	\$0.00	\$0.00	\$192,080.00	

This Financial Assistance Award approved by the Federal Co-Chair of the Denali Commission constitutes an obligation of federal funding.

The Denali Commission (Commission) is providing a total of \$119,639 to the Cold Climate Housing Research Center (CCHRC) to implement, refine and demonstrate on-site wastewater systems as a means of reducing the costs and improving the effectiveness of wastewater treatment systems in rural Alaskan communities, thereby fostering improvements in rural sanitation and public health and meeting the needs of communities, regulators, and the Commission. Work will specifically focus on reducing the energy demand of the sewage treatment plant (STP) system, with a target of 50% reduction in electricity demand.

CCHRC is allocating \$3,301 of Alaska Housing Finance Corporation grant funding to the STP project. Three STP systems are subject to monitoring, one of which cost \$25,850

and was paid for by CCHRC, one of which cost \$18,995 and was paid for by Taggiugmiullu Nunamiullu Housing Authority, and one of which costs \$18,995 and has

yet to be purchased and installed. GW Scientific is contributing \$3,800 to the project and Life Water Engineering is providing \$1,500.

Signature of Authorized Official - Denali Commission	Typed Name and Title	Date
Electronically Signed	George Cannelos Federal Co-Chair	08/17/2009

Rev: 05/2008

AWARD ATTACHMENTS

Cold Climate Housing Research Center

01162-00

- 1. Award Conditions
- 2. Memorandum of Understanding

Award Conditions to the Financial Assistance Award Between the Denali Commission and the Cold Climate Housing Research Center For Sustainable Northern Shelters Sewage Treatment Plant Award No. 01162 August 2009

1. Scope of Work

The Denali Commission (Commission) is providing a total of \$119,639 to the Cold Climate Housing Research Center (CCHRC) to implement, refine and demonstrate onsite wastewater systems as a means of reducing the costs and improving the effectiveness of wastewater treatment systems in rural Alaskan communities, thereby fostering improvements in rural sanitation and public health and meeting the needs of communities, regulators, and the Commission. Work will specifically focus on reducing the energy demand of the sewage treatment plant (STP) system, with a target of 50% reduction in electricity demand.

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Background

The CCHRC is an industry-based, non-profit corporation created to facilitate the development, use and testing of energy-efficient, durable, healthy, and cost-effective building technologies for Alaska and the world's cold climate regions. At the Commission's June quarterly meeting held in Fairbanks on June 4 and 5, 2009, George Cannelos, Federal Co-Chair of the Commission and Jack Hebert, President/CEO of the CCHRC signed a *Memorandum of Understanding* (MOU, attached), recognizing a mutual interest in developing and promoting the use of sustainable building practices in rural Alaskan communities.

The CCHRC developed the Sustainable Northern Shelter (SNS) program to address rural community needs for homes that will stand up to the challenges of a northern climate. The goal of the program is to work with rural communities to develop a housing design that will benefit their community. Part of this work includes providing cost-effective, efficient wastewater treatment that suits the environment and fosters improvement in human health.

While septic systems are typically the lowest cost choice for onsite wastewater treatment, this option is not available for many Alaskans because of the presence of permafrost, shallow groundwater and other complicating site conditions. Holding tanks are another option frequently used in bush Alaska, but present operation and maintenance challenges often related to the high cost of pumping and disposal. Another common situation is for

homes to be out of reach from existing community wastewater systems. One alternative in these scenarios is to package on-site sewage treatment plants that treat wastewater sufficiently to allow discharge of the treated effluent onto the ground surface.

The CCHRC built the first SNS demonstration home in Anaktuvuk Pass during the early summer of 2009. This house incorporates numerous innovative design features including an ExtremeSTPTM packaged on-site sewage treatment plant manufactured by Lifewater Engineering Company to keep construction costs down, be energy efficient, and maintain a healthy living environment. As part of the SNS housing project in Anaktuvuk Pass, the CCHRC is experimenting with innovative installation and operation techniques to optimize the performance and energy efficiency of the ExtremeSTPTM system.

Next summer the CCHRC plans to build further SNS demonstration homes both on the North Slope as well as in other regions of the state. As the SNS program expands, the CCHRC plans to continue to use packaged on-site sewage treatment plants when appropriate and plans to continue to maximize effective and efficient operation of on-site wastewater treatment at future sites.

Project Partners:

- CCHRC Lead on project funding, project objectives and Sustainable Northern Shelter program.
- GW Scientific Expertise on data collection, instrumentation, and remote monitoring.
- Lifewater Engineering Company Technology holder, expertise in wastewater treatment.

Stakeholders:

- Anaktuvuk Pass receiving community.
- TNHA Taggiugmiullu Nunamiullu Housing Authority and property owner of Anaktuvuk Pass House.
- Denali Commission, Alaska Housing Finance Corporation (AHFC), Association
 of Alaska Housing Authorities (AAHA), Department of Environmental
 Conservation (DEC), Alaska Native Tribal Health Consortium (ANTHC) Rural
 Alaska construction and wastewater system funding and operating agencies.

Scope

Under this Award, the CCHRC will:

1. Evaluate the wastewater treatment needs of participating rural communities in order to provide feedback for the design, installation and modification of treatment systems. The ExtremeSTPTM system is known to be effective when treating a waste stream typical to urban Alaska; however, the potential for higher

organic loading from a subsistence-based lifestyle common to rural Alaska may stress the capabilities of the system.

- a) Assess village wastewater system design needs and requirements by incorporating this topic into upcoming community-based design charettes being conducted as part of the SNS program.
- b) Monitor water use in the Anaktuvuk Pass home, a second site to be determined as part of future SNS projects, and at the CCHRC Research and Testing Facility (RTF).
- c) Collaborate with occupants to monitor activities in three systems under study that might affect raw wastewater characteristics.
- d) Reduce the energy demand of the three designated on-site sewage treatment systems while maintaining optimal performance of the systems.
- e) This project has a goal of a 50% reduction in electrical demand, compared to specifications for standard installation and operation of the Lifewater ExtremeSTPTM system.
- f) Experiment with system installation and operational variables including intake air for the system blower, insulation, and the timer control for the blower.
- g) Investigate the possibility of automatic controls for the blower based on thermal needs and wastewater flow rates.
- 2. Develop remote monitoring for optimizing performance and maintenance. Remote monitoring of the Anaktuvuk Pass system is necessary for this research project, and will help advance remote performance monitoring systems at future sites. Remote monitoring will enable more precise operations and maintenance of the systems by providing automated performance measurements and response protocols.
 - a) Design and implement remote monitoring of the STP wastewater system at the SNS Anaktuvuk Pass house.
 - b) Develop remote monitoring and control systems for future STP installations in order to know how the systems are working without having to travel to the villages, and develop response protocols to optimize the efficiency and effectiveness of system maintenance.
 - c) Apply remote monitoring protocols at a second rural site.
- 3. Demonstrate the effectiveness and efficiency of on-site wastewater treatment systems for use in rural Alaska. Lifewater's previous rural experience has shown that a user's lack of understanding of the water and wastewater systems can lead to unnecessary electrical draw (e.g. heat tape used inappropriately) and/or avoidable pipe or system freeze-ups.
 - a) Establish community contacts to monitor satisfaction with and opinion of the STP.
 - b) Establish agency contacts to ensure acceptance of design modifications.
 - c) Evaluate and report on performance of the Anaktuvuk Pass house, a second SNS project house, and RTF systems.

Deliverables under this Award include:

- 1. Brief project updates during spring and summer 2010 including:
 - a) Cursory reports on energy use, system performance, and remote monitoring of Anaktuvuk Pass house and RTF system.
 - b) Website content.
- 2. Project final report by early Winter 2011 including:
 - a) System performance.
 - b) Optimal system installation and use.
 - c) Remote monitoring protocol.
 - d) Report on village onsite wastewater system needs and typical usage.
 - e) Sanitation and public health benefits.
 - f) "Lessons learned" and recommendations section.

Lessons Learned

The CCHRC will provide the Commission with "lessons learned" under this award and will be reported as a component of the CCHRC's final report, as listed above. Reported will be the most pertinent learned lessons from the project, including outcomes, accomplishments, and challenges, targeting the Commission's role as a state-wide programmatic funding partner. Other targeted audiences may include: industry and state partners, potential project beneficiaries, technologists and academics, and the general public.

Budget and Timeline

The budget for this Award is as follows:

Personnel		\$ 12,621
Travel		\$ 3,160
Supplies and Miscellaneous		\$ -
Contracts and Services		\$ 86,347
Contingency		\$ 1,167
Subtotal		\$ 103,295
Indirect Costs	based on	\$ 58,371
Applied to the "Modified Total Direct Cost" as de OMB Circular A-122.	scribed in	
Administration (15%)	\$ 8,756	
Occupancy (11%)	\$ 6,421	
Professional Fees (2%)	\$ 1,167	
Indirect Total		\$ 16,344
Total		\$ 119,639

The CCHRC will complete the work under this Award in three phases:

- Phase I (In Progress): Community Involvement, Project Scoping, Initial Monitoring. Begin August 2009
 - Engage the community of Anaktuvuk Pass and other stakeholders (e.g. ANTHC and Village Safe Water) through contacts established already by the Sustainable Northern Shelter program. Identify the current wastewater treatment problems in the community.
 - Conduct a focused literature review to determine potential for monitoring parameters such as biological oxygen demand (BOD) and total suspended solids (TSS) by proxy in-situ measurements to avoid frequent or underrepresentative discharge sampling.
 - Design and install remote monitoring system and protocols in Anaktuvuk Pass.
 - o Install monitoring system at CCHRC RTF.
 - o Design and implement testing and modification strategy for identifying optimized performance strategy.
 - o Operate monitoring protocols, collect and analyze performance data.
- Phase II (In Progress): Implementation and demonstration at future SNS program sites. April 2010 - September 2010
 - o Incorporate wastewater treatment needs assessment into village design charettes to be conducted during the winter of 2009-2020.
 - o Determine preliminary findings from monitoring and testing conducted during the winter at the Anaktuvuk Pass house.
 - o Apply preliminary recommendations to SNS home construction projects in other villages where use of the ExtremeSTPTM system is preferred.

- o Install and apply monitoring system and protocol at one SNS project using ExtremeSTPTM system for comparison and reporting.
- Phase III (Project Close-Out): Complete full data collection, final evaluation and reporting. September 2010 December 2011
 - Establish estimated costs for long term operation and maintenance of the existing ExtremeSTPTM system as installed and optimized at each location. Compare these to design specification baseline data.
 - Provide recommendations on optimization strategies for future ExtremeSTPTM sewage treatment plant installations. Predict long-term costs and energy demand of newer STP systems when combined with optimization strategies proposed by this project.
 - Provide final report on village use patterns and needs and the effect identified usage patterns have on performance of ExtremeSTPTM sewage treatment plant.
 - Provide final report on remote monitoring system effectiveness and potential application in conjunction with automated control systems designed to maximize performance.

All Commission funding is intended for use for the scope of work identified in the Award document only. Any balance of funds remaining after the full scope of work has been completed will be returned to the Commission. Any travel under this Award must follow the Federal Travel Regulation (FTR) in order to be eligible Commission costs. All activities that involve the work of consultants or contractors must be procured through fair and open procurement processes, in keeping with the Federal Circulars, in order to be eligible Commission costs.

2. Milestones

The following milestones are identified as the major steps to be completed as part of the project. "Planned" dates for the first milestone are included here. As part of each progress report, recipients shall update the progress toward meeting these milestones (see section 7, Reporting).

	Planned		Actual			
Milestone	Start Date		Start Date			Total Cost At Completion
In Progress	08/01/2009	09/31/2010			0	\$0.00
Project Close-out	10/01/2011	12/31/2011			0	\$0.00

3. Award Performance Period

The Award performance period is August 1, 2009 through December 31, 2011. This is the period during which Award recipients can incur obligations or costs against this Award.

4. Direct and Indirect Costs

The cost principles of OMB A-122 are applicable to this Award. Indirect costs up to 28% are allowable under this Award (see budget for additional information). Please refer to the cost principles regulations for specific details on other allowable charges under this Award.

5. Budget and Program Revisions

The Administrative Circular 2 CFR Part 215 applies to this Award. Please refer to the Administrative Circular for specific details on revisions to this Award. The Administrative Circular requires that the CCHRC will inform the Commission in writing (e-mail, letter, or report) at the earliest possible date of any unanticipated project cost overrun, project schedule delays, or changes in the project scope or changed site conditions.

6. Payments

Payments under this Award will be made by electronic transfer in response to a "Request for Advance or Reimbursement", Standard Form 270 (SF-270) submitted by the CCHRC. Requests for reimbursements may be made as needed. The SF-270 must be submitted to the Commission via fax, e-mail (finance@denali.gov) or mail in order for payment to be processed. The form is available on the OMB website: http://www.whitehouse.gov/OMB/grants/grants_forms.html. Payments shall be made in accordance with 2 CFR Part 215. Please contact the Commission's Finance Specialist at (907) 271-1414 for further information about submitting this form. No interest will be accrued on these funds.

7. Reporting

Two forms of project reporting are required under this Award, listed below. The CCHRC shall submit reports using the Commission's on-line Project Database System, available at www.denali.gov. If there are technical limitations which may prevent the recipient from meeting this requirement, please contact the Program Manager listed in this agreement.

- a. **Progress Reports** shall be submitted on a quarterly basis. The first reporting period is August 1, 2009 to September 30, 2009, and quarterly thereafter. Reports are due within 30 days of the end of the reporting period. Progress reports shall include the following:
 - i. Total project funding, including both Commission funding and other project funding sources.
 - ii. The total project expenditures for the project as of the end of the reporting period, including both Commission and Other funding sources.

- Updated schedule and milestone information as identified in the Scope of Work.
- iv. Narrative summary of the project status and accomplishments to date, and address the following questions: is the project on schedule, is the project on budget, and what actions are planned to address any project problems.
- v. For minor repair and renovation projects or other non-construction projects, pictures should be provided of before and after, or photos that are representative of the funded activity, to the extent possible. Photos shall be provided in a digital format as part of the on-line report. A short description of the activity and names of those in the photos shall also be provided.
- b. **Federal Single Audits** shall be submitted annually, when required. In accordance with OMB Circular A-133, which requires [subpart 200]"Non-Federal entities that expend \$500,000 or more in a year in Federal awards shall have a single or program-specific audit conducted for that year in accordance with the provisions of this part [subpart 205]. The determination of when an award is expended should be based on when the activity related to the award occurs."

Recipients shall also submit single audits to the Federal Clearinghouse as designated by OMB. Information can be found on the following web site: http://harvester.census.gov/sac/

8. Project/Award Close-Out

The project close-out report shall be completed within 90 days of the end of the Award performance period or within 90 days of the completion of the project, whichever is earlier. Recipients must also draw down any remaining funds for expenditures incurred under this award during this 90-day period.

The project close-out report shall be submitted on-line through the Commission's on-line Project Database System, available at www.denali.gov. The project close out will require the recipient to submit the following information:

- a. Final data for each item listed in paragraph 7(a) "Progress Reports"
- b. Final project expenditures itemized by the following categories: planning & design; materials & equipment; freight; labor; project administration/overhead and other expenses.
- c. Acknowledgement of support: For all non-construction projects, the Award recipient shall include an acknowledgement of the Government's support for the project(s) developed under this Award. The format for acknowledgement of the Government's support for non-construction awards will vary with each award and must be agreed upon between the Award recipient and the Commission Project Manager. Under this Award, the CCHRC shall recognize the partnership of the Commission on 1) related website material, 2) the final report, and 3) any presentations, material, or other

subsidiary work developed from this Award activity. Costs associated with this requirement shall be paid out of the project funding received by the Award recipient from the Commission.

9. Public Policy Laws and Assurances

Award Recipients are required to comply with the public policy laws and assurances on Standard Forms SF 424b. Some of the laws are highlighted below for your reference.

To the maximum extent practicable, considering applicable laws, Funding Recipients shall accomplish the project contemplated by the Award using local Alaska firms and labor.

No portion of this award may be used for lobbying or propaganda purposes as prohibited by 18 U.S.C. Section 1913 or Section 607(a) of Public Law 96-74.

Project level environmental reviews in accordance with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) are required for each project undertaken with Commission funds.

10.Non-Compliance with Award Conditions

Recipients not in compliance with the terms and conditions of this Financial Assistance Award will be notified by the Commission. The Commission will work with the recipient to identify the steps necessary to bring them back into compliance, and will establish an appropriate time frame for the corrections to be made. If the corrections have not been made by the deadline, the Commission reserves the right to either suspend or unilaterally terminate the Financial Assistance Award for non-performance.

11. Program Manager, Financial Manager & Other Contact Information

Denali Commission	CCHRC
Denali Daniels	Nate Mohatt
Program Manager	Chief Operations Officer
510 L Street, Suite 410	1000 Fairbanks Street
Anchorage, AK 99501	P.O. Box 82489
Phone: 907-271-1189	Fairbanks, AK 99708
Fax: 907-271-1415	Phone: 907-457-3454
E-mail: ddaniels@denali.gov	Fax: 907-457-3456
	Email: nate@cchrc.org
Mariah McNair	Marie Duncan
Grants Administrator	Financial Administrator
510 L Street, Suite 410	1000 Fairbanks Street
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MEMORANDUM OF UNDERSTANDING



The Denali Commission and Cold Climate Housing Research Center



June 2009

I. INTRODUCTION

This Memorandum of Understanding (MOU) is made between the Denali Commission, (referred to hereinafter as the Commission) acting through the Federal Co-Chair, pursuant to the provisions of the Denali Commission Act of 1998 (P.L. 105-277), and the Cold Climate Housing Research Center, a 501c3 not for profit corporation (referred to hereinafter as CCHRC).

II. PURPOSE

This MOU establishes a working relationship between the Commission and CCHRC, in recognition of a mutual interest in developing and promoting the use of sustainable building practices in rural Alaskan communities.

III. STATEMENT OF MUTUAL INTEREST AND BENEFITS

Congress enacted the Denali Commission Act in 1998 to address the serious problems associated with the lack of adequate infrastructure, basic utilities and economic development throughout Alaska, particularly in rural communities where unemployment and the cost of living are exceptionally high. The Commission seeks to ensure that services delivered to rural Alaska are appropriate and sustainable, consistent with CCHRC's mission and purpose of "promoting and advancing the development of healthy, durable, and sustainable shelter for Alaskans and other circumpolar people."

It is both mutually beneficial and in the best interest of the Commission and CCHRC to collaborate on the following general initiatives related to sustainable building practices in Alaska:

- research, analysis, data collection, and studies on sustainable infrastructure, arctic construction, renewable and alternative energy systems, and energy efficiency;
- ongoing discussions regarding the sustainability of rural villages, innovative community planning techniques, and infrastructure development plans;
- demonstration and implementation of innovative and sustainable design and construction methods.

Anticipated benefits include refining services delivered by the Federal government and promoting sustainable, energy efficient, affordable and healthy building in Alaska.

IV. THE COMMISSION SHALL

- Designate a Commission staff member for CCHRC, to serve as a point of contact and coordinator for collaborative efforts.
- Identify programmatic activities, initiatives, projects or policies of the Commission relevant to this MOU and review, as appropriate, with CCHRC.
- Participate on an annual basis in sponsorship activities as deemed appropriate and mutually beneficial to both organizations.

V. CCHRC SHALL

MOU – Sustainable Building Practices CCHRC & Denali Commission – June 2009

- Designate a CCHRC staff member for the Commission, to serve as a point of contact and coordinator for collaborative efforts.
- Identify programmatic activities, initiatives, projects or policies of CCHRC relevant to this MOU and discuss, as appropriate, with the Commission.
- Be available to serve as a resource to the Commission on specific projects related to sustainable building practices, as deemed appropriate.
- Participate in Commission activities, such as Quarterly Meetings, Advisory Committee meetings, and project planning and design reviews, as deemed appropriate and mutually beneficial.

VI. IT IS MUTALLY AGREED AND UNDERSTOOD BY AND BETWEEN THE PARTIES THAT

OBLIGATION. This is not a legally binding agreement, nor does it serve as the basis for legal obligations. Any binding agreement between the parties will be subsequent to this MOU and will be signed by all parties at that time.

MODIFICATION. Modification within the scope of this instrument shall be made by the mutual consent of the parties, by the issuance of a written modification, signed and dated by both parties, prior to any changes being performed.

TERMINATION. Either party, in writing, may terminate the instrument in whole, or part, at any time before the date of expiration.

VII. PRINCIPAL CONTACTS

The principal contacts for this instrument are:

Jack Hébert

President/CEO

Cold Climate Housing Research Center

1000 Fairbanks Street

Fairbanks, Alaska 99708-2489

(907) 457-3454

George Cannelos

Federal Co-Chair

Denali Commission

510 L Street, Suite 410

Anchorage, Alaska 99501

(907) 271-1414

VIII. COMPLETION DATE

This instrument is executed to become effective as of June 5th, 2009 and expires no later than June 5th, 2010 at which time it is subject to review and renewal or expiration.

George J. Cannelos

Federal Co-Chair, Denali Commission

Date

Date

Jack Hébert

Cold Climate Housing Research Center

President/CEO